

Fiona McCluskey

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Education

University of California, Davis

PhD in Physics

Davis, CA

September 2019 – March 2026

Bryn Mawr College

BA in Physics

Magna Cum Laude

Bryn Mawr, PA

September 2015 – May 2019

Research experience

Graduate Research

Advisor: Andrew Wetzel (UC Davis)

Fall 2019 – Present

I used hydrodynamic zoom-in simulations to model the cosmological formation of the disks of Milky Way-mass galaxies, including the roles of disk settling and dynamical heating over cosmic time, and develop frameworks for comparing the observed kinematics of different galaxies.

Undergraduate Reserach

Advisor: Kate Daniel (Bryn Mawr College)

Summer 2017 – Spring 2019

I used analytical simulations to constrain the process of radial migration/cold-torquing in galactic disks and investigated the dynamical response of stars to overlapping resonances.

Publications

Stellar Velocity Dispersion versus Age: Consistency across Observations and Simulations, with the Milky Way as an Outlier

McCluskey F., Wetzel A., Loebman S. R., Moreno J. 2025, *OJAp*, submitted. *arXiv:2506.11840*

Disc settling and dynamical heating: histories of Milky Way-mass stellar discs across cosmic time in the FIRE simulations

McCluskey F., Wetzel A., Loebman S. R., Moreno J., Faucher-Giguere C.-A., Hopkins P. F., 2024, *MNRAS*, 527, 6926

Hot or Cold? Radial Redistribution of Stars in FIRE Simulations of Milky Way-Mass Galaxies and the Asymmetry of Inward versus Outward Migrators

Steel C., Wetzel A., Kang R., McCluskey F., Loebman S.R., Daniel K.J., 2026, *OJAp*, submitted. *arxiv:2607.00077*

Radial redistribution of stellar orbits in FIRE simulations of Milky-Way-mass galaxies

Bellardini M., McCluskey F., Wetzel A., Steel C., Loebman S.R., Moreno J., 2026, *OJAp*, submitted. *arxiv:2605.06781*

Spiral Structure Properties, Dynamics, and Evolution in MW-mass Galaxy Simulations

Quinn, J. R., Loebman, S. R., Daniel, K. J., Beraldo e Silva, L., Wetzel, A., Debattista, V. P., Arora, A., Ansar, S., McCluskey F., Masoumi, D., Bailin, J., 2026, *ApJ*, 997, 363

Understanding the Origin and Dynamical Evolution of the Unique Open Star Cluster Berkeley 20 using FIRE Simulations

Wiggins A. I., Quinn J. R., Oeur M., Loebman S. R., Frinchaboy P. M., Daniel K. J., McCluskey F., Otto J. M., Woodward H. R., D’Onghia E., Wetzel A., Parul H., Bhattarai B., Cozzi M., 2025, *ApJL*, 995, L25

The proto-galaxy of Milky Way-mass haloes in the FIRE simulations

Horta D., Cunningham E.C., Sanderson R., Johnston K.V., Deason A., Wetzel A., **McCluskey F.**, Garavito-Camargo N., Necib L., Faucher-Giguère C.A., Arora A., Gandhi P.J., 2024, *MNRAS*, 527, 981

When Cold Radial Migration is Hot: Constraints from Resonant Overlap

Daniel K. J., Schaffner D. A., **McCluskey F.**, Fiedler Kawaguchi C., Loebman S., 2019, *ApJ*, 882, 111

Teaching experience

Lead Teaching assistant, University of California, Davis

Undergraduate Astronomy Lab	Fall 2021, Spring 2023
Undergraduate Introductory Galactic Astronomy	Spring 2024

Teaching assistant, UC Davis

General Physics 1	Fall 2019
General Physics 2	Fall 2020, Spring 2021
General Physics 3	Spring 2020

Teaching assistant, Bryn Mawr

Calculus II	Fall 2016
Calculus III	Spring 2017
Introductory Physics Lab	Spring 2018, Fall 2018
Advanced Physics Lab	Spring 2019

Grants

NASA FINESST (totalling \$100,000)	September 2024-2026
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Talks

UC Davis Cosmology Seminar – Davis CA	Spring 2026
Santa Cruz Galaxy Workshop – Santa Cruz CA	Summer 2024
Surveying the Milky Way: The Universe in Our Own Backyard – Pasadena CA	Fall 2023
GalFRESCA – Riverside CA	Fall 2023
Santa Cruz Galaxy Workshop – Santa Cruz CA	Summer 2023
Wide-Field Spectroscopy vs Galaxy Formation Theory Workshop - Tucson AZ	March 2023
Disk Formation Workshop - Irvine CA	September 2022

Related Experience

Journal Club: Hosting and facilitating discussions of recently submitted research papers for the physics and astronomy department at UC Davis.	June 2023 - March 2026
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